White-spotted Pinion moth *Cosmia diffinis* (L.) (Lep.: Noctuidae): Beating for larvae and light-trapping for adults in Huntingdonshire in 2000

In *Atropos* number 10, pages 5-9, I proposed searching for caterpillars of the White-spotted Pinion moth *Cosmia diffinis* on elms in different situations. A particular aim was to discover whether or not the caterpillars occur mainly on epicormic growth on elm, that is the foliage that grows from twigs produced directly from the trunk. That was the considered opinion of the late A. J. Wightman, a much respected caterpillar hunter, as quoted by Gerry Haggett (1981. T*he larvae of the British Lepidoptera not figured by Buckler*. BENHS, London). If generally true, this observation could explain both the massive decline of this moth following the ravages of Dutch elm disease from the 1970s onwards, and its apparent failure to make use of the low elm re-growth now abundant again in hedgerows and elsewhere in the English countryside. A dependence on epicormic-type growth, or the woodland situation in which it occurs, might limit the moth to breeding in the few places where mature elm trees survive. This article focuses on the results of beating for larvae at one of the surviving strongholds for the moth in Huntingdonshire, partly to illustrate the use of the "ten-spot beat" as a general method for investigating patterns in the distribution of moth larvae on trees and shrubs. The exciting thing about beating is that, while you do not always find what you are looking for, there are usually some pleasing surprise catches, and this session was no exception. We were also out light-trapping for the adult moths later in the year, logging a total of 18 site-nights in Huntingdonshire between 22 July and 29 August.

During 2000, the White-spotted Pinion was light-trapped in six of the eleven sites where it was sought in Huntingdonshire, and in at least one site just over the border in Cambridgeshire. The light-trapping confirmed that the moth occurs in woods, copses and overgrown hedgerows without mature trees, but all of the places where it was recorded offered abundant supplies of elm foliage in the shade of an elm canopy above and sheltered by other elms all around, rather like the situation and micro-climate in which epicormic growth is often found. The moth was seen from 4 – 29 August, with the largest catch in one trap being seven, on 14 August. Almost all the other trap-nights with a positive result produced only one moth, which is notably lower than the numbers which have been recorded in the last few years. This probably relates to cool wet weather during the larval period. Just our luck in the year we decided to concentrate on this species! All the moths arrived between 21.45 and 22.30 hours.

The two Tables below show the results of our beating for larvae. Table 1 shows all the species of caterpillars we found and the number in each of our samples. Samples a – r were the results of beating on 22 May 2000 (19.00 – 22.00 hours, dead calm, clear and dry after showers in day). Samples 1–9 were obtained by PW on 5 June 2000 (14.30 – 15.00 hours, calm, dry, mild, overcast). All samples were standard ten-spot beats. The ten-spot beating sample as a means of standardising sampling effort for comparison of different situations was described by Waring (2000. *Atropos* 10: 5-9). For example, Table 1 shows that two Winter Moth larvae were found in sample (a), drawn from low saplings. Table 2 gives more details about each sample.

It shows that sample (a) was from Wych Elm saplings 6-7 metres tall growing under an open sky, rather than below an elm canopy like some other samples. Most of the larvae were identified on site and released again after the end of the sampling, taking only a few for confirmation.

Table 1. The species and numbers of moth larvae obtained from elm by beating in four different situations. Samples a to r and 1 to 9 are indicated within round brackets and each is followed by the number of larvae in each sample. Negative results are omitted from the table.

Winter moth *Operophtera brumata* (L.)

Low saplings (<6m tall): (a) 2, (c) 1, (d) 2, (e) 1, (f) 2, (g) 2, (h) 1, (i) 2, (l) 1, (n) 4, (p) 3, (r) 5

Low branches on tall trees: (1) 1

Trunk growth on tall trees: (j) 1, (m) 2

Tree canopy: (o) 4

Comments: Total 34 larvae. Larvae frequent in all four situations.

Dunbar *Cosmia trapezina* (L.)

Low saplings (<6m tall): (a) 1, (g) 1, (i) 2, (l) 1, (r) 1, (3) 2

Low branches on tall trees: –

Trunk growth on tall trees: (j) 3, (m) 1

Tree canopy: –

Comments: Total 12 larvae. Larvae frequent on low growth and epicormics.

Lunar-spotted Pinion *Cosmia pyralina* (L.)

Low saplings (<6m tall): (c) 1, (k) 1, (3) 2

Low branches on tall trees: (1) 1

Trunk growth on tall trees: –

Tree canopy: –

Comments: Total 5 larvae. Larvae present both on low regrowth under open sky and on the lower branches of mature trees under a full canopy.

Satellite *Eupsilia transversa* (Hufn.)

Low saplings (<6m tall): (a) 1, (i) 1, (q) 1

Low branches on tall trees: –

Trunk growth on tall trees: (4) 1

Tree canopy: (o) 1

Comments: Total 5 larvae. Larvae present on low regrowth, epicormics and in the canopy, even possibly more frequent in the latter.

Mottled Umber *Erannis defoliaria* (Clerck)

Low saplings (<6m tall): –

Low branches on tall trees: (b) 1

Trunk growth on tall trees: (4) 1, (5) 1

Tree canopy: –

Comments: Total 3 larvae. Not very frequent. Apparently absent from the low regrowth in the open.

March Moth *Alsophila aescularia* (D.&S.)

Low saplings (<6m tall): (d) 1, (e) 5

Low branches on tall trees: (2) 1

Trunk growth on tall trees: –

Tree canopy: –

Comments: Total 7 larvae

Common Quaker *Orthosia cerasi* (Fab.)

Low saplings (<6m tall): (e) 1, (i) 1, (p) 1

Low branches on tall trees: –

Trunk growth on tall trees: (m) 1

Tree canopy: –

Comments: Total 4 larvae

Engrailed *Ectropis bistortata* (Goeze)

Low saplings (<6m tall): (c) 1, (d) 1, (k) 1

Low branches on tall trees: –

Trunk growth on tall trees: –

Tree canopy: –

Comments: Total 3 larvae

Dotted Border *Agriopsis marginaria* (Fab.)

Low saplings (<6m tall): (p) 1, (8) 1

Low branches on tall trees: –

Trunk growth on tall trees: (m) 1

Tree canopy: –

Comments: Total 3 larvae

Pale Brindled Beauty *Apocheima pilosaria* (D.&S.)
Low saplings (<6m tall): (i) 1, (6) 1
Low branches on tall trees: –
Trunk growth on tall trees: –
Tree canopy: –
Comments: Total 2 larvae

Scalloped Oak *Crocallis elinguaria* (L.)
Low saplings (<6m tall): (d) 1
Low branches on tall trees: –
Trunk growth on tall trees: –
Tree canopy: –
Comments: Total 1 larva

November Moth *Epirrita dilutata* (D.&S.)
Low saplings (<6m tall): –
Low branches on tall trees: –
Trunk growth on tall trees: (m) 1
Tree canopy: –
Comments: Total 1 larva

August Thorn *Ennomos quercinaria* (Hufn.)
Low saplings (<6m tall): (6) 1
Low branches on tall trees: –
Trunk growth on tall trees: –
Tree canopy: –
Comments: Total 1 larva (reared to adult by PW)

Twin-spotted Quaker *Orthosia munda* (D.&S.)
Low saplings (<6m tall): (f) 1
Low branches on tall trees: –
Trunk growth on tall trees: –
Tree canopy: –
Comments: Total 1 larva

Small Quaker *Orthosia cruda* (D.&S.)
Low saplings (<6m tall): –
Low branches on tall trees: –
Trunk growth on tall trees: (5) 1
Tree canopy: –
Comments: Total 1 larva

Yellowtail *Euproctis similis* (Fues.)
Low saplings (<6m tall): (e) 1
Low branches on tall trees: –
Trunk growth on tall trees: –
Tree canopy: –
Comments: Total 1 larva

Comma *Polygonia c-album*(L.) larva
Low saplings (<6m tall): (8) 1
Low branches on tall trees: –
Trunk growth on tall trees: –
Tree canopy: –
Comments: Total 1 larva

The two Tables, used in conjunction, provide all the information for each species and each sample. A total of 85 macro-lepidopterous larvae of 17 species was recorded, including 17 individuals of the genus *Cosmia,* but none of the White-spotted Pinion. The positive records confirm which situations the various species breed in, but in most cases the densities of larvae are so low that it is not possible to be sure that there are real differences between the various situations. The Mottled Umber appears to be absent from low elm re-growth under an open sky and only to occur in situations under the tree canopy. However, in other places and dates, I have found larvae in more open situations. Another explanation might be that the greater warmth of the sun in the open enabled more rapid development and that larvae in the open had all pupated by the sampling dates. Both the larvae found on 5 June were in their final instar and would soon be pupating, but the larva on 22 May was only half-grown. The pleasant surprise find for me was the larva of the August Thorn. This is not a species I have encountered very often as a larva, and was my first from elm, which P. B. M. Allan (1949. Larval foodplants. Watkins & Doncaster. Hawkhurst,

1979 reprint) considered one of the main larval foodplants. The fact is, of course, that in recent years there has been much less elm to beat. I was not surprised to see the larva of the Comma butterfly, which I have found on low elm re-growth in sunny situations quite frequently – my surprise with this species in 2000 was finding a larva feeding on the leaves of the Gooseberry bushes in our garden, another foodplant well-known to Allan (*op. cit.*).

Table 2: Habitat features of the beating samples a – q and 1 – 9 grouped by species of Elm and type, height and situation of plant.

Wych Elm *Ulmus glabra* with rough large leaves (det. D. Evans)

Low saplings

6-7m tall (under open sky) – Samples: a,c,d,k, all beaten at 2m from ground

Hybrid between Small-leaved Elm *Ulmus minor* and Wych Elm *U. glabra*

Low saplings

4m tall (under open sky) – Samples: g,h,i,l,n,r,p,q,

8-9m tall (effectively forming their own light tree canopy) – Samples: e,f,6,7,8 all beaten at 4-5m from ground

Mature trees

Lower branches (under full canopy) – Samples: b,1,2,3,9 all beaten at 2m from ground

Epicormics/growth from trunk (under full canopy) – Samples: j (6-7m above ground), m,4,5 (4m above ground)

Tree canopy – Sample o (obtained by snipping off twigs onto a sheet with long clippers)

A third attempt to find larvae was made on 10 June by Barry Dickerson and David Evans, concentrating on collecting anything resembling the White-spotted Pinion, but without success.

As to why we found no larvae of the White-spotted Pinion in a wood where we recorded adults in both the previous summer and in August 2000, several reasons have been suggested. First, as 2000 proved not to be a particularly good year for numbers of the adult moth in August, there may well have been few larvae to find, perhaps because of the prolonged wet weather during the spring as mentioned. A second reason may be due to the fact that the larva conceals itself in a spun elm leaf by day, from which it emerges to feed in the evening and after dark. If it was very tightly or strongly wrapped, it might not be possible to dislodge it by beating and none would fall onto our beating trays. However, we had no trouble beating the two other *Cosmia* species which are more frequent in the wood, both of which spin in leaves. Also, one of the reasons for conducting the first beating session in the evening was to intercept larvae emerging from their shelters. A third reason could be that the larvae were in places we were unable to sample in any quantity, namely high up in the canopy or epicormic growth of mature trees. In 2001, we shall hope that the populations are larger and that we encounter some larvae amongst the various types of growth which can be reached from the ground. In this and other searches we need

to find ways of obtaining more samples from the higher parts of the trees and, as in 2000, it is worth repeating the operation on several dates over a 2-3 week period. For the record, I was the only member of our group (Huntingdonshire Moth & Butterfly Group) to find a larva of the White-spotted Pinion in 2000. This was in an elm shelterbelt, several trees deep, just over the county boundary in Cambridgeshire. It was found on 28 May 2000 by searching epicormic growth by hand for spun leaves. Only one larva was found, about 2.3 metres from the ground, in a site previously visited successfully on 14 May 2000 by John Chainey, who passed the details to me. Unfortunately, the larva was small and soon produced a parasitoid (Waring, 2001. *Ent. Rec.* **113**: 135-138), so I was unable to study its feeding behaviour and the ease of separating the larva from its spinning during the later instars. As expected, the larval spinning for the small larva is quite tight and protective. Even more unfortunately, all the moths we captured during the light-trapping were males or spent females and no eggs were obtained to enable larvae to be reared in different conditions to study their behaviour. We shall hope for better luck in 2001. The larva and the habitat in which it was found are illustrated in Waring (2001. *Ent. Rec.* **113**: 135-138).

Incidentally, John Chainey has had the same experience of failing to find larvae during searches in a site that subsequently produced reasonable numbers of the adult moth at light-traps. It is also apparent from our searches that there are many insects which spin up elm leaves; spinnings are numerous, but few are of *Cosmia* species.

I would like to thank all who joined me for the caterpillar hunts, and particularly David Evans for providing the ladder and conducting the beating at levels higher than the rest of us could reach from the ground. As regards light trapping for adults, Barry Dickerson and David Evans have done a commendable job investigating woodlands in Huntingdonshire for moths and latterly in taking a special interest in the White-spotted Pinion. The UK BAP project has provided an extra impetus and means for further work. The author thanks the Butterfly Conservation "Action For Threatened Moths Project" and English Nature for financial support for this work. There are many woods with elm still to be explored for this moth in Huntingdonshire and elsewhere and clearly much to learn about finding the larvae.– PAUL WARING, 1366 Lincoln Road, Werrington, Peterborough PE4 6LS.

Some notes and observations on the Small Eggar *Eriogaster lanestris* (L.) (Lep.: Lasiocampidae) in Somerset

The decline of the Small Eggar in England has been well documented. For example, Waring (1993. *British Wildlife* **5:** 53) gives a distribution map showing records from some fifty-seven 10-kilometre squares since 1980, compared with over 300 before that date. Skinner (1998. *The Colour Identification Guide to Moths of the British Isles*. Second edition, Harmondsworth) attributes its decline to the "wholesale destruction and indiscriminate trimming of hedgerows, combined with the pollution caused by motor vehicles and the drift from agricultural insecticides". Until about 12 years ago it was thought that the situation in Somerset mirrored the national scene.